TRANSMITTAL OF APPEAL BRIEF (Large Entity)

Docket No. 3768

In Re Application Of: **SHENDI, A.**

Application No.	Filing Date	Examiner	Customer No.	Group Art Unit	Confirmation No.
10/583,672	02/20/2007	MOK, A.	278	2834	7111

Invention: **STATOR FOR AN ELECTRICAL MACHINE**

COMMISSIONER FOR PATENTS:

Transmitted herewith is the Appeal Brief in this application, with respect to the Notice of Appeal filed on:

12/22/2010

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Dated: **02/14/2011**

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REG. NO.: 27233

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UNITED STATES PATENT AND TRADEMARK OFFICE

Examiner: Mok, Alex W. Art Unit: 2834 Docket No. 3768

In re:

Applicant: SHENDI, A.

Serial No.: 10/583,672

Filed: 02/20/07

BRIEF ON APPEAL

February 14, 2011

Commissioner for Patents
P O Box 1450
Alexandria, VA 22313-1450

This is a Brief on Appeal from the final rejection of Claims 1 and 3-12 by the primary Examiner.

REAL PARTY IN INTEREST

The real party in interest in this application is Robert Bosch GmbH having a business address of Postfach 30 02 20, D-70442 Stuttgart, Germany.

RELATED APPEALS AND INTERFERENCES

There are no prior and pending appeals, interferences or judicial proceedings known to appellant, the appellant's legal representative, or assignee which may be related to, directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

STATUS OF CLAIMS

This application was filed originally with Claims 1-12.

During the prosecution of this application, Claim 2 was cancelled.

The present application now contains Claims 1 and 3-12. All claims are rejected by the Examiner.

STATUS OF AMENDMENTS

The last Office Action in this application was issued on July 12, 2010.

After this Office Action, no Amendment has been filed.

SUMMARY OF CLAIMED SUBJECT MATTER

The present invention deals with the stator for an electrical machine, in particular a rotary current generator.

In accordance with the present invention, as defined in Claim 1, the stator (36) is made by a flat-packet technique and comprises at least one stator iron (10, 30) having substantially annular-cylindrical shape. The stator iron has an axial direction A which is oriented in the direction of a cylinder axis. The stator iron has an end face which is oriented in the direction of the cylinder axis and defines a slot area (A_{Nut}). A ratio A formed of the slot area (A_{Nut}) and the end face amounts to between 0.4 and 0.7. This is disclosed in lines 2-13 on page 5 of the specification and shown for example in Figure 4. The stator iron (10, 30) has a number of individual laminations (13) which are stepped one above the other and also has two face ends (22) which rest directly against one another. This is disclosed in lines 9-17 on page 3 of the specification and shown in Figure 1.

GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

In the Office Action of July 12, 2010, Claims 1 and 3-12 were rejected under 35 USC 103(a) over the European Patent Document No. EP 1353431 to Asao in view of the article of Ojo "Multi objective optimum design of electrical machines for variable speed, motor drives."

Therefore, the only ground for rejection to be reviewed on appeal is whether Claims 1 and 3-12 are rejectable under 35 USC 103 over the combination of the above identified two references.

ARGUMENT

In regard to the prior art applied by the Examiner, and in particular to the Asao reference, it is respectfully submitted that this reference discloses a rotor provided with a rotor winding (13) and a first a second pole cores (20 and 21). The pole cores (20 and 21) are composed of iron and each have eight claw-shaped magnet poles (22, 23). A stator (8) is arranged around the rotor (7).

The Ojo reference discloses an electrical machine which also has a stator as can be seen from Figure 1. A person of ordinary skill in the art who familiarized himself with the teaching of the Ojo reference, in particular page 136, right column, paragraph 2 ("The design...") will come to the conclusion that the rotor is a part of a motor with surface-mounted permanent magnets.

The design of a surface-mounted permanent-magnet motor that results in maximum motor efficiency and minimum material and production cost is presented to illustrate the advantages and usefulness of the optimization approach.

The Ojo reference, on page 163, left column, paragraph 3 ("Electric motors...") also discloses the following:

Electric motors for industrial drive applications of the future will mostly likely be current-controlled and their design criteria are different from existing motor designs.

On page 164, left column, in the center it is described that:

The principal design variables include the stator inner and outer diameters, rotor length, magnetic and electric loadings, magnet size, winding turns ratio and many other geometrical dimensions.

The teaching of the Ojo reference excludes, by this limitation to the machine which allow the magnet range (the permanent magnets and thereby permanent magnetic excitation), a transition to machines whose excitation is electrical.

The Ojo reference further clarifies that:

1. Design criteria for the construction of different electrical motors are different,

2. The optimization of the Ojo reference deals with motors with surface-mounted permanent magnets,

3. The equations disclosed in the Ojo reference are applied to a motor with surface-mounted permanent magnets, as disclosed on page 163, column 2, last three lines.

Since the Ojo reference makes clear that the design criteria for the construction of the different electric motors are different, it is completely unclear how the teaching of the Ojo reference with respect to a motor with a rotor which has the surface-mounted permanent magnets (excitation of the rotor by permanent magnets) can be transferred to the design of a very different machine such as disclosed in the Asao reference and is a generator with a rotor, having a rotor winding (13) (excitation of the rotor by electrical winding) and with pole cores (20 and 21) each having four claw-shaped magnet poles (22 and 23).

The present invention provides for the highly advantageous results. As can be seen from Figure 6A, for example for the slot factor 80% (dash-dot line) during the approximation from the higher values to the lower values for A = 0.4 = 40%, an expected "bend" in the course of the curve and then a sudden strong fall of the curve is produced, and thereby the transition from a high wide level in the current delivery to a relatively strong fall of the current delivery.

As can be seen from Figure 6B, for example for the slot factor (65) (dot line) exactly under the upper limiting value for A = 0.7 = 70% an unexpected clearly higher level in the course of the curve and thereby in the current delivery

can be seen, so that coming from lower values close to the limiting values A = 0.7 suddenly a relative stronger fall of the current delivery occurs.

The claims have been rejected as being obvious over the combination of the references. As explained hereinabove, it is believed that the references did not disclose the new features of the present invention, and they could not be combined with one another as a matter of obviousness. A person of ordinary skill in the art who familiarized himself with the teachings of the references would not have any hint, suggestion, or motivation to combine the references with each other.

It is believed to be advisable to cite the decision In Re Fritch, 23 USPQ 2d 1780-1783-84, in which it was stated:

> Obviousness cannot be established by combining the teachings of the prior art to produce the claimed invention, absent some teaching or suggestion supporting the combination...Teachings of the references can be combined only if there is some suggestion or incentive to do so.

Definitely, there can be no suggestions or incentives to combine the above discussed references, and therefore the references are not combinable as a matter of obviousness.

The present invention is not disclosed in the reference and cannot be derived from them.

Also, as explained hereinabove, the present invention provides for the highly advantageous results which cannot be accomplished by the devices disclosed in the references. It is well known that in order to support a valid rejection the art must also suggest that it would accomplish applicant's results. This was stated by the Patent Office Board of Appeals, in the case Ex parte Tanaka, Marushma and Takahashi (174 UPSQ 38), as follows:

> Claims are not rejected on the ground that it would be obvious to one of the ordinary skill in the art to rewire prior art devices in order to accomplish applicant's result, since there is no suggestion in prior art that such a result could be accomplished by so modifying prior art devices.

In view of the above presented remarks and amendments it is believed that Claim 1, the broadest claim on file, should be considered as patentably distinguishing over the art and should be allowed.

As for the dependent claims, these claims depend on Claim 1, they share its allowable features, and they should be allowed as well.

It is therefore respectfully requested to reverse the Examiner's rejection of the claims and to allow the present application with all the claims currently on file.

Respectfully submitted,

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Reg. No. 27233

CLAIM APPENDIX

1. A stator for an electrical machine, in particular a rotary current generator, in which the stator (36) is made by the flat-packet technique and comprises at least one stator iron (10, 30) and the stator iron (10) has a substantially annular-cylindrical shape, and in which the stator iron (10) has an axial direction (a) which is oriented in the direction of a cylinder axis, and the stator iron (10) has an end face which is oriented in the direction of the cylinder axis and defines a slot area (A_{Nut}), wherein a ratio A formed of the slot area (A_{Nut}) and the end face area amounts to between 0.4 and 0.7, wherein the stator iron (10, 30) has a number of individual laminations (13) which are stacked one above the other, and also has two face ends (22) which rest directly against one another.

3. The stator as defined by claim 1, wherein the stator iron (10) has forty- eight inner teeth (19), and the ratio A amounts to between 0.45 and 0.70.

4. The stator as defined by claim 3, wherein the ratio A is between 0.45 and 0.60.

5. The stator as defined by claim 1, wherein the stator iron (10) has thirty-six inner teeth (19), and the ratio A amounts to between 0.4 and 0.6.

6. The stator as defined by claim 5, wherein the ratio A is between 0.40 and 0.55.

7. The stator as defined by claim 1, wherein a slot fill factor (F) amounts to between 50% and 80%.

8. The stator as defined by claim 7, wherein the slot fill factor F amounts to between 60% and 70%.

9. The stator as defined by claim 1, wherein a slot (25) has a contour which is defined toward the yoke by diametrically opposed tooth sides (59) and a yoke contour (62), and the tooth sides (59) of a slot (25) have a maximum spacing (b_{z3}) from one another in the circumferential direction; and that a slot pitch (τ_3) is the spacing between two directly adjacent tooth centers of the stator iron (10) at the diameter of the maximum spacing (b_{z3}), where (c3), which is a ratio formed of a spacing (b_{z3}) toward a yoke and the slot pitch (τ_3) at the yoke, amounts to between 0.45 and 0.65.

10. The stator as defined by claim 1, wherein a slot (25) has a contour which is defined toward the tooth head by diametrically opposed tooth sides (59) and tooth head contours (62), and the tooth sides (59) of a slot (25), at

the transition to the tooth head contours (65), have a spacing (b_{z2}) from one another in the circumferential direction; and that a slot pitch (τ_2) is the spacing between two directly adjacent tooth centers at the diameter of the spacing (b_{z2}) of the stator iron (10), and where (c2), which is a quotient of a slot width toward a tooth head and a slot pitch ($\tau 2$) at a tooth, amounts to between 0.45 and 0.65.

11. The stator as defined by claim 10, wherein (c2) amounts to between 0.50 and 0.60 and (c3), which is a ratio formed of a spacing (b_{z3}) toward a yoke and a slot pitch (τ_3) at the yoke, amounts to between 0.47 and 0.60.

12. The stator as defined by claim 1, wherein tooth sides (59) change over by means of rounded transitions to tooth head contours (65) and a yoke contour (62), and the radii amount to between 0.3 mm and 2.0 mm.

EVIDENCE APPENDIX

None.

RELATED PROCEEDINGS APPENDIX

None.